# "Discrimination in the Provision of Social Services to the Poor: A Field Experimental Study"

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## I. Introduction and motivations.

The provision of social services to the poor by the state are contained in an exchange relationship where a local officer, representing a state's social welfare function, delivers services to the poor, based on limited resources that need to be allocated according to criteria compatible with the state's priorities. In turn, these state's priorities are supposed to reflect the social choice preferences of the citizens-voters with respect to redistribution and help to the poor.

Because of the nature of such relationship, where private information and coordination failures can emerge, the quality and distribution of those services are subject to potential problems of efficiency and equity, when the local officers deliver services that are not compatible with the social welfare function. For instance, the providers may include particular groups that should not receive the services, or exclude others that should be covered. Further, there is room for corruption and misallocation of resources for private interests. In general, there is a principal-agent problem and observation of the provider's actions can be costly.

We, therefore, rely to some extent on the moral, normative, and self-regulatory systems in the individual preferences of the local officer. The (private) decisions by the local officer are mediated by her individual social preferences with respect to altruism, reciprocity, trust and distributive justice towards the beneficiaries of the social programs If the social preferences of the local officers are well aligned with the social welfare function of the policy being implemented, the outcomes will be socially desirable in terms of efficiency and equity. Otherwise, scarce resources targeted at the poor can be misallocated affecting the effectiveness of the policy.

This study is precisely aimed at the understanding of the micro foundations of the interactions involved in the provision of social services to the poor. In particular, the study uses an experimental field approach to better understand the preferences and behavior of both individuals involved in the provision of social services and the behavior of those potential beneficiaries, the poor.

### Discretion and Discrimination in the provision of social services.

Discrimination and social exclusion in various domains of economic life can create losses in terms of efficiency and equity. Particular characteristics of individuals, many of which they did not choose during their lives but had for different genetic or acquired reasons, make them excluded from receiving the benefits of certain social exchange situations regarding the market, the state, or their life in community. Such exclusion creates efficiency losses in many cases, and equity problems in general. Credit, land and labor markets are subject to discrimination and exclusion. The political arena can also exclude people from expressing their preferences and affecting the outcomes on their favor.

Much of the theoretical and empirical literature can be classified in two major approaches, 'statistical discrimination' (Arrow-Phelps) and the 'taste for discrimination' (Becker) which

have focused on imperfect markets where room for discrimination can affect economic outcomes[1]. The housing and labor markets are among the most frequently studied domains in the discrimination literature. Experiments, audit studies, surveys and other methods have been used for exploring how workers can be discriminated against in labor contracts and job application processes. Race and gender have been systematically tested as characteristics where discrimination can occur and create equity and efficiency losses. Housing and credit markets have also been subject to different inquiries regarding discrimination.

Less studied, however, have been issues of discrimination in the non-market domains of social services provision, particularly to the poor. Social programs aimed at improving access to education, health, and child care for the poor are good examples of these settings. As in imperfect markets, the provision of public goods and social services by the state can also be subject to discrimination, with certain individuals treated in a less favorable way than others with equivalent constitutional rights or under the same provider and location. Unfortunately being poor and having some of the characteristics for which individuals are discriminated against and excluded, coincide. Indigenous and afro-descendent frequently appear among the poorest and excluded in the Latin American region, and therefore are more vulnerable. Migrants (*campesinos*) from the rural areas suffer various kinds of discrimination when seeking access to the same services that others have received in the past.

Latin America, as one of the most unequal regions but also one of the most diverse in terms of race, ethnicity, social backgrounds, imposes special challenges with respect to discrimination and social exclusion. Also, the region is suffering a dramatic transformation in terms of their urban-rural dynamics that create particular problems we are yet to understand in depth. Persistent rural poverty and inequality, the economic changes in the agricultural sector, cultural change, political conflicts and civil wars have created a migration to the cities that imposes a challenge to the provision of public goods and social services by the state, particularly to the poorest that expand the metropolitan areas of the region. Meanwhile, decentralization and devolution of the state create also greater challenges to local governments in providing these services to the poor, in cities that are evolving into worlds within worlds, with wealthy neighborhoods and slums with severe social needs to be fulfilled. Thus, political tensions in the developing and developed world emerge when the excluded can observe within their cities that others have access to public goods and social services.

Governments have responded with systems of focalization to target the very poor, creating survey procedures and algorithms to rank poor households for the distribution of such social services. Much of those programs labeled as SISBEN[2] (Irarrázabal, 2004) are in place in the region, as mechanisms for the targeting of social protection programs. In fact those programs are aimed at targeting the most vulnerable in an attempt to positively discriminate with redistributive goals. Yet, there is room for discrimination and exclusion. Irarrázabal (2004) does recognize this as one of the two risks of these indices of focalization of beneficiaries when some individuals that should be included, remain excluded, when manipulation of the information emerges. His estimations might suggest that at least for the cases of Chile and Colombia there might be room for suspecting such problems. Some of these could occur

[1] See Chaudhury and Sethi (2004) for a survey of the Arrow-Phelps literature on stereotypes and statistical discrimination.
[2] SISTEMAS UNICOS DE INFORMACION SOBRE BENEFICIARIOS EN AMERICA LATINA

because of discrimination, but the evidence cannot be used to support. Nuñez and Espinosa (2005) also find statistical support from the Encuesta de Calidad de Vida 2004 in Colombia that there might be errors of inclusion (households that should not and are receiving subsidies) and errors of exclusion (households in need excluded), discriminating against households with elderly, displaced from violence and also households heads with low levels of education.

Gaviria and Ortiz (2005) provide statistical evidence for Colombia suggesting that minorities may be asymmetrically attended, for instance, in the subsidized health program. Using self-reported data for ethnicity, they find that indigenous have higher likelihoods of being included in the state subsidized health program[3] than afro descendants or blacks, controlling for other factors such as location, education, age, consumption and employment. The causalities, however, are still undefined. One plausible reason is that greater amounts of national government transfers flow to areas with larger fractions of indigenous groups if compared to those with blacks. Also, indigenous have a longer tradition of social cohesion and organization to claim their rights with the government than afro descendants who only during the new constitutional process have shown attempts for social organization and collective action. But still there is the possibility that discrimination explains a process where blacks are less likely to enter the social protection program given the steps involved in targeting, affiliating and delivering the services.

Further, there is documented evidence in sentences from the Constitutional Court in Colombia[4] using the mechanism of the *tutela*[5], where individuals who have been classified erroneously argue that their rights and the principle of equality have been violated in their classification into the SISBEN indexing system.

In general, there are behavioral issues that are at the core of the problem. For instance, if there is a 'taste for discrimination' those who generate the discrimination (e.g. employers) will have to show it in their other-regarding preferences, which could be validated empirically, or experimentally. Bertrand and Mullainathan (2004) have devised a clever experiment in the field, randomly sending constructed CVs to newspaper ads for job postings, and observing the probability of being called for an interview to test for discrimination in the labor markets based on prejudices emerging from the names used, and without photos or ethnic background. The results were astonishing as not only being identified as black decreased the probability of getting an interview, but also the marginal gains from other characteristics like education and home location would matter more strongly if you had a white name. However, their results would be limited for explaining the behavioral process in the minds of those deciding to call applicants for an interview.

As for the case of government programs that provide social protection to the poor, rather little has been said about the behavioral aspects of local officials' decision making. We can agree that programs and policies aimed at helping the poor are based on pro-social preferences of the majority that vote and thus elect and appoint officials that will run those programs. But the contract between officials and the electorate is incomplete and subject to asymmetries of

[3] Régimen Subsidiado en Salud, based on SISBEN rankings.
[4] http://www.ramajudicial.gov.co, http://200.21.19.133/sentencias/
[5] "writ of protection of constitutional rights"

information. Further, the individual preferences of those in government and executing the programs are unobservable in many cases.

Particularly if we recognize that we are in a world of imperfect markets and public goods problems, the role of the state through their representatives' behavior and preferences is crucial. As eloquently said by Bowles & Gintis (2000) *"Many are now convinced that John Stuart Mill's injunction that we must devise rules such that the "duties and the interests" of government officials would coincide should be shelved, along with the assumptions of the Fundamental Theorem of Welfare Economics, in the museum of utopian designs."*.

## II. Summary of the research project

This project is aimed at exploring the microeconomic foundations of pro-social behavior in the relationships associated with the provision of social services to the poor. The empirical strategy is mainly experimental, and in particular conducted in the field with actual actors involved in such provision.

In general we designed a battery of games where there are players 1 who represent public officials who allocate resources to provide social or aid to players 2 (the poor) based on the characteristics of the latter. We have both **target** (actual public officials) and **control** subjects (students, government and private sector employees, etc) in both roles. We also have a fifth game where there is a third player who judges and allocates resources to punish behavior considered as anti-social.

The sample of people comes from different government organizations and beneficiaries or potential beneficiaries from the education, health, nutrition and child care sectors in different geographical locations of the city of Bogotá. More detail about the recruited subjects and their particular characteristics is reported later on in the report.

## III. Questions and Hypotheses

The project is aimed at detecting the foundations of pro-social behavior by public officials as well as the poor in the delivery of social services. Dimensions like altruism, reciprocity, inequity aversion, trust, distributive justice and social sanction are all important in the understanding the reasons why as a society we target resources towards the poor. However, these dimensions might be influenced by both aspects that should and others that should not guide the allocation of resources, e.g. level of education or number of dependents vs race or marital status. The discretion on th e part of the public officials might discriminate against certain groups creating social losses in terms of equity and efficiency in the allocation of scarce public resources.

Secondly, the poor being actual or potential beneficiaries of the social programs might also self-discriminate if their expectations about such processes of discrimination affect their expectations or application towards such services.

Our experimental strategy emerges from the hypothesis that allocation of resources to the poor is mediated by a) the social preferences and behavior of the local officials in charge of the provision, and b) the preferences and behavior of the potential beneficiaries that could affect self-selection and self-discrimination. The overall null hypothesis is that public officials will allocate resources according to the constitutional mandate and the objectives of the particular features of the specific public policy, that is, based on the attributes of the recipients that guide the redistributive goal of the social policy. The null hypothesis also implies that according to the constitutional mandate there should be no discrimination against certain groups according to their race, ethnicity, occupation, marital status or other particular conditions (e.g. being displaced (*desplazado*) from violence to the city.

With the experimental designs and the collection of data we did for the subjects pools recruited we are able to capture a significant amount of these aspects at the foundations of the motivations for public officials when allocating resources, and the motivations of the poor when expressing their expectations and observing their realized outcomes both outside our lab and during our experiments.

## IV. Research design and field work

### Pre-experimental field work

Previous to the experimental sessions, we visited at least two important sources of data regarding violations of constitutional rights based on discrimination. One is the Constitutional Court and the other is the *Defensoria del Pueblo*. Both of these gave us an idea of the type of framing we wanted to construct in our protocols and also in the design of the recruitment strategy across public agencies and geographical locations in the city.

For the Constitutional Court we found a number of sentences emerging from the mechanism of the *tutela* to command public institutions to guarantee social services to the poor (education, health services and nutrition). The field research team found the following type of sentences: 1) individuals who have been classified erroneously in SISBEN arguing that their rights and the principle of equality have been violated in their classification into the SISBEN indexing system; 2) displaced people who argue for an equal treatment when asking for social services such as health care and medicines[6], education[7] for their children, housing and economic stabilization programs and child care, 3) displaced people who argue for a registration as a displaced (to obtain the *Sistema Único de Registro de Desplazados*); 4) people who has been treated with no reason for health care institutions[8]

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[6] The Constitutional Court in Colombia has commanded the *Red de Solidaridad Social* and the health care institutions to guarantee the access to the health system and the supply of medicines.

[7] The Constitutional Court in Colombia has commanded the *Red de Solidaridad Social* and the education institutions to guarantee the access to the education system .

[8] T-1229-05, T-1138-05, T-891-05, T-747-05, T-630-05, T-614-05, T-569-05, T-548-05, T-418-05, T-393-05, -343-05, -287-05. ee http://www.ramajudicial.gov.co/csj_portal/jsp/frames/index.jsp?idsitio=6&ruta=../jurisprudencia/consulta.jsp

In the following table we report a list of sentences found in the registry of the constitutional court between 1997 and 2004 with cases mentioning violations of right to people displaced from violence[9].

| Year | Number of Sentences |
|---|---|
| 1997 | 1 |
| 1998 | 1 |
| 1999 | 2 |
| 2000 | 2 |
| 2001 | 3 |
| 2002 | 4 |
| 2003 | 8 |

Source: http://www.ramajudicial.gov.co

Sentences from the Constitutional Court in Colombia (1997-2004), arguing particular vulnerabilities:

| Vulnerable Group | Number of cases |
|---|---|
| Displaced people | 55 |
| Handicapped people | 14 |
| Women | 10 |
| Old People | 10 |
| Street vendors | 2 |
| **Total general** | 91 |

In this pre-experimental process, the research team looked for allegations presented to The Colombian Ombudsmen (*Defensoría del Pueblo*) in which poor people claimed to be subject of social exclusion in the provision of social services. At the Colombian Ombudsmen's Institution our team found 100 accusations out of 1123 that described possible circumstances in which poor people could have experienced discrimination by the local officials, who attend in the provision of social services. In the diverse cases of discrimination, there were 52% that dealt with institutions that provide health, 20% referred to institutions of education, 20% stressed problems with surveyors who made SISBEN survey, 6% illustrated claims with institutions that provide nutrition and 2% showed impasses with child care institutions. Trying to see socio-demographic features that present people who are discriminated we found the following: 64% of people who displayed denounces were women, 46% were unemployed or working at their houses, 9% were displaced citizens, 30% were handicapped citizens, 7% belonged to people who are from other parts of the country or fit an indigenous or black group in.

In regards the purpose of this study and based on these results, we introduce in the random sample shares of demographic features that are subject to discrimination. Between those shares, we decide to include in the sample the category of "Reinsertados" because in the process of this inquiry we found a lot of cases in which this part of the Colombian population has experienced social exclusion when they applied for a social service.

[9] T- 653010, T-684470, T-699715, T-702437, T-619610, T-685774, T-700727, T-702574, T-675083, T-687040, T-700902, T-675955, T-687987, T-701212, T-675076, T-688002, T-701296, T-682674, T-692204, T-701300, T-619610, T-697477, T-675076, T-697866, T- 683850, T-697908, T- 684071, T-698940, T-684744, T-700088, T-685774, T-700362, T-685986, T-700370, T-686775, T-700902, T-687274, T-701730, T-687987, T-701850, T-687325, T-703423, T-688002, T- 705236, T-688767, T-706749, T-689104, T-775898, T-689307, T-690437, T-692204, T-692218, T-692410, T-693606, T-686751.

These data show an increase in the number of cases that argue discriminatory actions from the state and provide some clues for the kind of characteristics we may include in the treatment and control variables for our experiments.

## V. Experimental strategy.

The experimental strategy for this project emerges from the hypothesis that discrimination in the provision of social services to the poor is mediated by a) the social preferences and behavior of the local officials in charge of the provision, and b) the preferences and behavior of the potential beneficiaries that could affect self-selection and self-discrimination. Therefore, we need to design an experiment where these two players (service providers and beneficiaries) interact and are informed by the characteristics that might be affecting the strategic behavior in the interaction. Some of those characteristics are supposed to guide the decisions of the providers in the correct direction, i.e. aligned with a social welfare function that reflects the society's preferences, but there are characteristics that may bias behavior towards discriminatory outcomes and against the constitutional mandate.

The context and frame of the game is rather simple: a government program, inspired by a constitutional mandate and a policy design, involves a social welfare function that needs to be executed by local officials who will aim at improving the well-being of the target population, in this case, the poor, through their privately observed actions. These local officials will allocate scarce resources and such allocation will affect the well-being of the beneficiaries. In some cases the latter will have room for strategic responses that may affect their own outcomes or even the outcomes of the local officers.

Any local official's behavior is expected to reflect the social welfare function of the government plan, but such officials, as agents whose behavior is only partially observable to the principal (the government agency) may not act entirely according to the social objective, and may include behavioral responses that reflect their own personal social preferences and biases. In particular, preferences towards social equity, ethnic or racial equity, among others can affect the behavior of local officials during the process of application and provision of social services to the poor.

In various ways local officials act as bounded dictators that assign resources to benefit recipients of social programs within a certain set of rules but also with some discretion in their actions. Their choices –only partially observable to the principal- affect the way funds are allocated and distributed among different social target groups subject to discrimination and biases of various kinds.

On the other hand, the social preferences of the poor can also be factors that influence the possibilities of discrimination. Social groups that expect to be discriminated may be more tolerant to unfair or unequal allocations. If in equilibrium such norms are replicated and widely spread, local officials can find morally acceptable to act accordingly and sustain the levels of discrimination without personal costs.

### a. Norms and behavioral mechanisms: Altruism, Inequity Aversion, Trust and Reciprocity.

There are various dimensions that lie at the core of the social exchange that occurs in the process of providing social services to the poor. These dimensions are critical in the interactions among the government program (the Principal), the local official (the Agent) that is in charge of executing the program, and the beneficiary (the recipient) of the social service. These dimensions include altruism, distributive justice, inequity aversion, trust, and reciprocity. Altruism and inequity aversion are at the core of the justification for pro-poor redistributive programs. The voter preferences are thus reflected in the design of government programs and the local officials are expected to implement such programs that increase the well-being of the poorest and that reduce social inequalities. However, such process can be affected by discrimination against certain social groups (e.g. racial or ethnic). Such discrimination, which in theory should not occur if the programs are designed in accordance to the constitutional mandate, can in fact happen in the process because of the discretionary role that the local officials have in the application, approval and provision process.

Trust and Reciprocity are important mechanisms in a relationship that involves the possibility of gains or losses because of coordination failures, interdependence or externalities. The provision of public goods, or the co-financing of public projects between the state and the community, depend on mutual trust for the optimization of available resources. Reciprocity can sustain cooperation or destroy it in such provision of public goods that are crucial to the poor. Once again, preferences that involve discrimination against certain groups can limit trust or trigger negative reciprocity, reducing the social efficiency of pro-poor programs.

In this study we conduct standard and modified experiments in the field that have been used widely for detecting and measuring degrees of altruism, inequity aversion, trust and reciprocity. Through these field experiments we will observe and measure the degrees of discrimination that may affect these dimensions, by having treatment and control sessions where we provide information to players about features of their counterparts in the experiment (e.g. gender, status, race, ethnicity, origin, occupation, family composition).

However, our protocols include a mild framing in every task where players are told that the game situation is similar to that where people request social services at local public agencies. Nevertheless, decisions remain private and confidential, maintaining the discretional nature of the allocation decisions on the part of the public officials as well as response strategies on the part of beneficiaries.

The five experiments selected are next, followed by the reasons for them to be included in our design:

- **(DDG) Distributive Dictator Game**[10]: Player 1 gets a fixed payment of, say, $10 as a salary for performing the following allocation task: She needs to rank five players 2 in the order in which they will receive each a fixed payment or voucher of $10 determined by a random distribution from 1 to 5 possible payments. The random number of

[10] The design for this game has been the result of a valuable exchange with the research team and Catherine Eckel (U.Texas at Dallas).

vouchers between 1 and 5 will decide the first N players 2 who will receive the $10. The remaining players get nothing. Player 1 observes cards for the five players 2 that include a picture of the face, and basic demographic and socio-economic conditions of the player.

- With this game we aim at measuring preferences for distributive justice, mediated by the characteristics of the beneficiaries, including those not associated to deservedness but discrimination.

- **(DG) Dictator Game (Kahneman, Knetsch and Thaler 1986; Forsythe et al. 1994)**: Player 1 decides over the distribution of a fixed amount of $20 and sends a fraction to player 2 who receives such amount. Player 1 keeps the remaining part for herself.
    - This game provides information about pure altruism, that is, willingness to decrease one's well-being for increasing the well-being of another.

- **(UG) Ultimatum Game (Guth et.al 1982):** Player 1 (proposer) decides over the distribution of a fixed amount and sends a fraction to player 2 (responder) who receives such amount. If accepted by the responder, the distribution happens, if rejected both players receive zero and the money returns to the experimenter.
    - The Ultimatum Game provides information about equity, reciprocal fairness and reciprocity as mechanisms to enforce social norms. Negative reciprocity and conformism can be critical to understanding the social preferences of both local officers and beneficiaries of social programs.

- **(TG) Trust Game (Berg.et.al 1995):** Both players 1 and 2 are endowed with $8. Player 1 (proposer) can send a fraction of her initial endowment to player 2 (responder). The amount sent is tripled before it reaches Player 2 who then decides how to split the tripled amount plus her initial endowment between herself and player 1.
    - The Trust or Investment Game offers critical information about trust and trustworthiness, critical in the augmenting of efficiency in the provision of public goods.

- **(3PP) Third-Party Punishment (Fehr and Fischbacher, 2004)**: This game is based on the Dictator Game (above) but includes a third party, player 3, who receives an additional endowment she can keep for herself or use for punishing player 1 if player 3 considers the action of player 1 as punishable due to fairness or justice considerations. Player 3 can punish by spending part of her endowment to reduce the payoffs of Player 1.
    - This game captures preferences for costly punishment of socially undesirable outcomes and willingness to punish unfair actions.

For any pair of players, each of these games are conducted as one-shot (1 round) with an exit survey on demographic, behavioral and psychological questions for control of the individual behavior observed in the experiments. All players 1 made decisions on all 5 games, and all players 2 were involved in each of the 5 games. Players 3 participated only on the last game (3PP). Next we describe in detail how the experimental sessions were run.

**b. Design of the Sessions**

The following table shows the sequence and components of the experimental sessions. The original design proposed for the study involved 24 people per session. Unfortunately these design was very difficult to conduct because of the number of people who failed in showing up at the time and location we had appointed them. 4 sessions of 24 people each were conducted under the 24 people design for a total of 96 people. After that we split the design in two and ran sessions with 12 people each from then on (Designs II and III in the table). Design III is equal to design II except for that there were more people recruited and attending such sessions and these were allowed to participate.

These changes did not affect the basic protocol design or the instructions. First, the DDG game where one player 1 made decisions based on 5 players 2 remained unaltered throughout. Secondly, all other games (DG, UG, TG and 3PP) involved the same number of interactions and decisions across the designs.

**STAGES FOR THE FIELD SESSIONS**

| DESIGN | Sessions | Number of sessions | Number of people | People By Roles | Total of participants |
|---|---|---|---|---|---|
| **Design I** | 1,2,4 | 3 | 24 | **J1** 10<br>**J2** 10<br>**J3** 4 | 72 |
| **Design II** | 3, 5-12 | 9 | 12 | **J1** 5<br>**J2** 5<br>**J3** 2 | 108 |
| | 13-21 (each one of 24 people) | 18 | 12 | **J1** 5<br>**J2** 5<br>**J3** 2 | 216 |
| **Design III** | 22-28 (each one of 26 people) | 13 | 12 or 13 | **J1** 5+1<br>**J2** 5<br>**J3** 2 | 163 |
| **Total** | | | | | 559 |

The following table shows the sequence and components of a single experimental session run with 12 players.

**STAGES FOR ONE FIELD SESSION (12 PEOPLE)**

| STAGE | ACTIVITY | LOCATION | DATA PRODUCED |
|---|---|---|---|
| **Stage I** | Recruitment of 5 players 2 (J2) | Streets, centers for the attention of target populations | Invitation, Photo, Pre-game demographics J2, received $2000 for transportation as part of their show up fee. |
| | Build Cards A-B-C-D-E (J2s) from demographics | | J2 Cards |
| **Stage II** | Recruitment of 5 players 1 (J1) | Service providers (health centers, public schools, daycare centers, community kitchens) | Invitation, Pre-game demographics J1, received $4000 (show up fee) |
| | Game decisions (5 activities) J1s | Workplace (80%) or campus lab (off-hours) (20%) | Game choices J1s |

| | | | |
|---|---|---|---|
| | Build Cards 1-2-3-4-5 (J1s) from demographics | | J1 Cards |
| **Stage III** | Recruitment of 2 players 3 (J3) | Workplace, streets, Campus | Pre-game demographics J3 |
| | Game decisions (Activity-5) J3s | | Game choices J3s |
| | Matching of choices by J1s, J3s | | Game outcomes |
| | Payments and exit survey J3s | | Receipts ($4000, show up fee) and post-game survey |
| **Stage IV** | Game decisions (5 activities) J2s | Campus (70%) or centers for the attention of targeted populations (30%) | Game choices J2s |
| | Matching of choices by J1s, J2s | | Game outcomes |
| | Payments and exit survey J2s | | Receipts and post-game survey, $2000 for bus |
| **Stage V** | Payments and exit survey J1s | Workplace | Receipts and post-game survey |

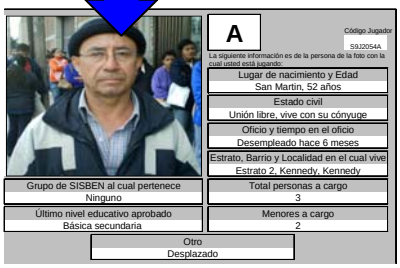
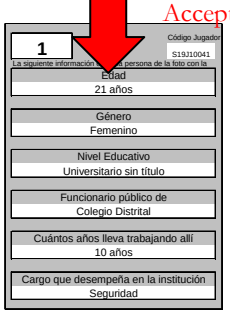
**c. Lab setting**

The following figure describes, for one of the activities (the Ultimatum game, or activity 2) the basic setup of the experimental design. All other games were conducted in same manner. In this case, based on the card of player 2, player 1 decides how much to send of the $20,000 given as endowment for the pair. Player 2 decides weather to accept or reject such offer. Depending on such decision the funds are allocated as initially proposed and if rejected, no payment is made to either player.

Players 1 are in one location, they do not see Players 2 and it has been told that Players 2 are located in another place. They do not see each other at any moment and identities and decisions are kept confidential. Players 1 are seated in their desk and enter their decisions privately in their respective spots. Decisions are written in a decisions sheet (paper).

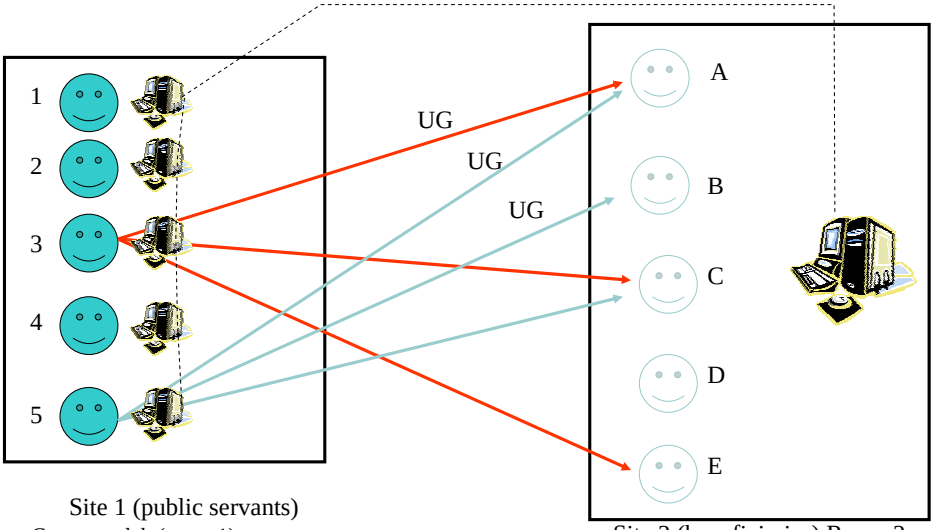
Player 2 are invited the next day to come to campus. At that time, Players 2 are seated in a waiting room and called one at a time to a desk where a monitor asks the decisions verbally and write them in a decisions sheet (paper). The monitor then writes the decisions of each player 2 in each activity. At the end of the five activities all decisions are matched for determining the earnings in each interaction and activity.

For the case of the Ultimatum game each player 1 will send 3 different offers to three players 2. An illustrative example is shown below:

<table>
<tr>
<td>Firts day<br>YESTERDAY<br>Player 2<br>Invitation,<br>Photo,<br>Pre-game demographics<br>$2000 for bus<br> <br>  <br><br>J2 Cards</td>
<td>Second day<br>TODAY<br>Player 1<br>Invitation,<br>Pre-game demographics,<br>$4000 (show up fee)<br>Game choices<br> <br>  <br><br>Game choices<br>J1 Cards</td>
<td>Third day<br>TOMORROW<br>Player 2<br>They assist to campus<br> <br><br> <br><br>Game choices<br>Game outcomes<br>Receipts and post-game survey,<br>$2000 for bus</td>
</tr>
<tr>
<td>Forth day</td>
<td>Player 1</td>
<td>Receipts and post-game survey</td>
</tr>
</table>

At the end of the session we selected randomly for each player at least one activity that will be paid in cash on top of the show up fee that is paid to cover the transportation costs of each participant. In average players were paid more than one activity, and this was common information for all players (See protocols in the appendix for details).

Previous to the decisions, players 1 and 2 received information about the other player in the particular interaction, through the cards mentioned before.




Site 1 (public servants)
Computer lab (room 1) on campus

Service providers (health centers, public schools, daycare centers, community kitchens): Workplace (80%) or campus lab (off-hours)

Site 2 (beneficiaries) Room 2

Campus (70%) or centers for the attention of targeted populations (30%) (20%)

The information that each player had available of the other player in each interaction is shown in the table below:

| **What Player 1 observed in Player 2 card** | **What Player 2 observed in Player 1 card** |
|---|---|
| Photo | Age |
| Birthplace and age | Gender |
| Marital status | Education level (highest degree obtained) |
| Occupation and time in it | Service provider (health, education, child care, food) |
| District, location and district stratification | Years working in it |
| Number of dependents | Position |
| Dependents that are minors | |
| Last year of education | |
| SISBEN | |

Based on such information, the players were asked to make their decisions in each of the games. Recall that each participant played the same game with 3 different people.

### d. Sampling and recruitment

We conduct these experiments among the groups described in the proposal including local officials and beneficiaries of social services, as well as control groups. Most of the cases Player 1 roles will be assigned to local officials and comparable control subjects, and the role of recipients will be played by people sampled from poor populations that are already or potentially beneficiaries of social services.

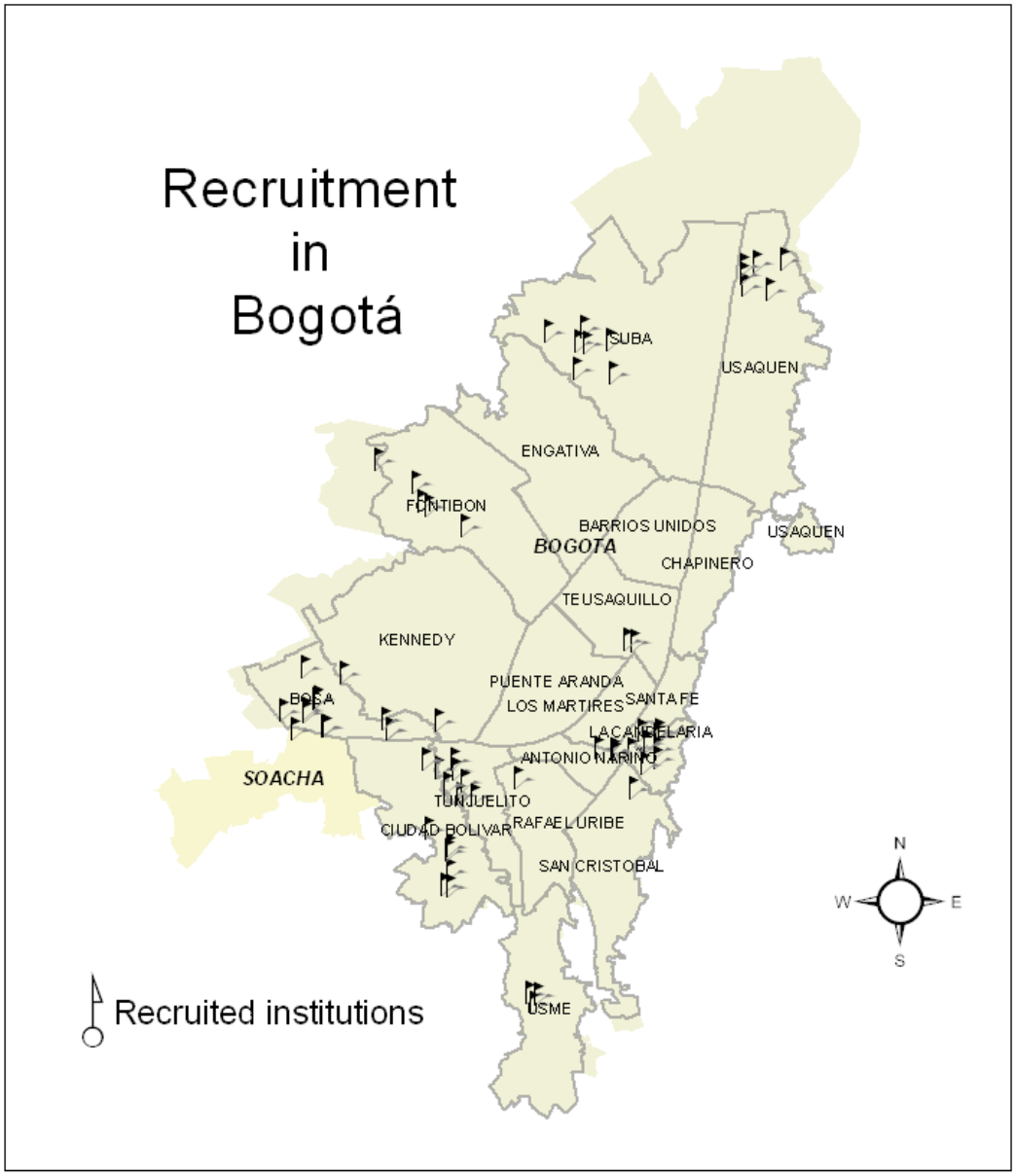
From now on we will use the terms "**target**" and "**control**" for our experiment participants. For "target" we will refer to those individuals involved in the direct process of application and delivery of social services. For the case pf players 1 the target sample will refer to those employed in the public service agencies to interact directly with the potential or actual beneficiaries of social services to the poor. These will include white collar and blue collar employees at the 4 types of agencies (education, health, child care and nutrition programs). As for the players 2, these will be people who are applying, are eligible to apply or actually receive social services of these kinds. As for the controls, we will recruit citizens of the city with different levels of education, income, occupation, location of residence who can serve as control groups for both players 1, 2 and 3.

For the recruitment of the participants we visited neighborhoods where potential beneficiaries apply for these social services, or where they actually receive them. Also we recruited local officials or employees for these government programs. Examples include health services for the poorest, public pre-school and day care centers, and community kitchens and nutritional government programs.

The groups to be included in the subject pool are:

- Potential, applicant and current beneficiaries of social protection services from populations.
- Local officials in Bogotá's agencies that provide social services such as education, health, day care and nutrition
- Surveyors usually hired by private contractors who conduct the SISBEN survey process for large cities and metropolitan areas
- Controls (other government officials and citizens with equivalent demographic characteristics as the groups above)

The following map shows the locations of the public agencies that we visited for recruiting Players 1. Later on there are more details of the types of agencies visited and the numbers of subjects recruited by agency. In general, these are the locations of the offices where potential and actual beneficiaries of social services attend to request or receive a service. They include offices for application to the programs or the actual delivery of them.




In these locations we found delivery of social services including health, education, child care and food or kitchens, run by the national or municipal state.

The confidentiality and privacy of data for the case of local officials is one of our major concerns in order to guarantee the revealing of preferences regarding fairness, altruism, and discrimination. Therefore, the identities of the local officials or their decisions are never revealed to the other players, and could not be observed by their superiors. In fact we have tried to recruit more than one officer from each service provider we visited in the sample.

For players 2 the recruitment was made among the poor and more vulnerable groups around these and other locations in the city, based on existing stratification for the city.

The next table shows the geographical location (*localidad*) of the household for the entire sample of participants, and the percentages by player role.

| Localidad | **N** | **j3** | **j2** | **j1** |
|---|---|---|---|---|
| Antonio Nariño | 20 | 0,0 | 85,0 | 15,0 |
| Barrios Unidos | 6 | 33,3 | 16,7 | 50,0 |
| Bosa | 17 | 5,9 | 58,8 | 35,3 |
| Candelaria | 1 | 0,0 | 100,0 | 0,0 |
| Chapinero | 54 | 25,9 | 59,3 | 14,8 |
| Ciudad Bolívar | 33 | 0,0 | 51,5 | 48,5 |
| Engativá | 43 | 32,6 | 7,0 | 60,5 |
| Fontibón | 26 | 19,2 | 7,7 | 73,1 |
| Kennedy | 35 | 25,7 | 17,1 | 57,1 |
| Mártires | 5 | 20,0 | 40,0 | 40,0 |
| Puente Aranda | 15 | 20,0 | 20,0 | 60,0 |
| Rafael Uribe | 14 | 0,0 | 50,0 | 50,0 |
| San Cristóbal | 38 | 0,0 | 71,1 | 28,9 |
| Santafé | 39 | 10,3 | 64,1 | 25,6 |
| Suba | 43 | 30,2 | 18,6 | 51,2 |
| Teusaquillo | 25 | 28,0 | 20,0 | 52,0 |
| Tunjuelito | 37 | 0,0 | 40,5 | 59,5 |
| Usaquén | 36 | 33,3 | 16,7 | 50,0 |
| Usme | 11 | 0,0 | 45,5 | 54,5 |
| Alrededores | 15 | 40,0 | 20,0 | 40,0 |
| **TOTAL** | **513** | **17,7** | **38,0** | **44,2** |

## VI. Data and results

### a. Our sample: Participants Recruited

We contacted a total of 568 people across the 3 sub-samples for players 1,2, and 3, including both target and control subjects. A percentage of them did not show up for the next stage of the study where we conducted the actual experiments. Of the total 568 recruited, 55 people ( 9.7%) did not show up for the game stage although they had received a Col.$2,000 as part of the show-up fee and as a commitment and help for transportation costs to the games location. For various reasons some did not show up. We attempted to contact them again, and some had reported false phone numbers, could not come at the time for unexpected events with family or work, or manifested to friends or other participants that they did not believe this was for real or it was a hoax[11]. Notice in the table that almost 18% of the recruited players 2 did

[11] We have, however, data for the 55 people who did not attend and will make a further analysis on their particular characteristics t explore problems of self-selection bias in our sample.

not show up. Also, these people had to make the longest trips across the city to attend the games and probably would find more reasons to show lack of credibility for this exercise.

Table. **Players who attended the sessions by role**

| Player Role | N | % of total recruited | % Target Group | %Control Group |
|---|---|---|---|---|
| **1** | 227 | 90,8 | 75,33 | 24,67 |
| **2** | 195 | 82,28 | 84,1 | 15,9 |
| **3** | 91 | 97,85 | 100% | |
| **TOTAL: 513** | | | **568 recruited** | |

In the following three tables we show the composition of our sample for Players 1, 2 and 3 for both the target and controls to give an idea of the locations and occupations they have.

Table. **Players 1 by composition**

| **Target Group** | | | **Control Group** | | |
|---|---|---|---|---|---|
| **Local Officers** | **N** | **%** | | **N** | **%** |
| Mayor´s office | 3 | 1,75 | College Students | 27 | 48,21 |
| Education[1] | 31 | 18,13 | Private sector[5] | 9 | 16,07 |
| Health[2] | 34 | 19,88 | Government (Central)[6] | 10 | 17,86 |
| Nutrition[3] | 28 | 16,37 | Government (District)[7] | 10 | 17,86 |
| Child Care[4] | 44 | 25,73 | | | |
| Surveyers SISBEN | 31 | 18,13 | | | |
| **Total** | **171** | **100** | | **56** | **100** |

[1] Public schools and CADELs (Local Administrative Center for Education)
[2] ARSs (Administradora del Régimen Subsidiado), UPAs (Unidad Primaria de Atención), UBAs (Unidad Básicas de Atención), CAMIs (Centros de Atención Médica Inmediata)
[3] Community kitchens and COLs (Local Operative Center)
[4] *Hogares comunitarios*, daycare centers, kindergarten, Casas Vecinales, nursery schools.
[5] Universities and NGOs
[6] DNP (Departamento Nacional de Planeación)
[7] SGD (Secretaría de Gobierno Distrital), SHD (Secretaría de Hacienda Distrital)

Table. **Players 2 by composition**

| **Target Group** | | | **Control Group** | | |
|---|---|---|---|---|---|
| | **N** | **%** | | **N** | **%** |
| Displaced people | 43 | 26,22 | Students | 27 | 87,10 |
| People with disabilities | 4 | 2,44 | Private sector[1] | 4 | 12,90 |
| Indigenous | 1 | 0,61 | Black | 6 | 19,35 |
| Excombatiente | 34 | 20,73 | SISBEN | 3 | 9,68 |
| Recycler | 18 | 10,98 | | | |
| Street vendor | 12 | 7,32 | | | |
| Black | 25 | 15,24 | | | |
| SISBEN | 107 | 65,24 | | | |
| **Total** | **164** | | | **31** | |

[1] Universities and NGOs

Table. **Players 3 by composition**

| Target Group | | | Control Group | | |
|---|---|---|---|---|---|
| **Officers** | **N** | **%** | | **N** | **%** |
| Government (Central)[1] | 38 | 90,48 | Students | 30 | 61,22 |
| Government (District)[2] | 1 | 2,38 | Private sector[5] | 13 | 26,53 |
| Congress | 1 | 2,38 | Street | 6 | 12,24 |
| Internacional Organizations[3] | 2 | 4,76 | | | |
| **Total** | 42 | **100** | | **49** | **100** |

[1] Ministerio de Comunicaciones, Ministerio de Hacienda, Ministerio de Minas y Energía, Super Intendencia Financiera, DIAN (Dirección de Impuestos y Aduanas Nacionales), CGR (Contraloría General de la República), FOSYGA (Fondo de Solidaridad y Garantías).
[2] SGD (Secretaria de Gobierno Distrital)
[3] CEPAL (Comisión Económica para América Latina)
[5] Universities and NGOs

To give an idea of the socio-economic status of the players recruited, we show in the tables below the household expenditures (Col. Pesos and in US dollars) reported by players for both the target and control sub samples..

**Players' Monthly Household expenditures by Role (COL$)**

| Role | Target | | | Control | | |
|---|---|---|---|---|---|---|
| **Player** | **1** | **2** | **3** | **1** | **2** | **3** |
| Mean | 730.304 | 336.711 | 1.689.286 | 2.256.786 | 1.444.828 | 2.858.537 |
| Min | 50.000 | 18.000 | 300.000 | 300.000 | 300.000 | 250.000 |
| Max | 9.000.000 | 1.000.000 | 6.000.000 | 10.000.000 | 6.000.000 | 15.000.000 |
| Desvest | 769.896 | 1.738.831 | 1.250.831 | 2.035.734 | 1.220.827 | 3.573.442 |

**Players' Monthly Household expenditures by Role (US$)**

| Role | Target | | | Control | | |
|---|---|---|---|---|---|---|
| **Player** | **1** | **2** | **3** | **1** | **2** | **3** |
| Mean | 293,22 | 135,19 | 678,25 | 906,10 | 580,10 | 1.147,70 |
| Min | 20,08 | 7,23 | 120,45 | 120,45 | 120,45 | 100,38 |
| Max | 3.613,50 | 401,50 | 2.409,00 | 4.015,00 | 2.409,00 | 6.022,50 |
| Desvest | 309,11 | 698,14 | 502,21 | 817,35 | 490,16 | 1.434,74 |

TRM: 1US$=COL$2490,66 (Montly mean average for May to July 2006. http//:www.banrep.gov.co)

It is also interesting to observe the kind of aid our player 2 participants receive from the government through different social services programs. The following table shows these, based on the demographic survey we filled for each participant (see appendix for the questionnaire)

Table. **Benefits of Target population (Players 2)**

| | Target | Control |
|---|---|---|
| **1. Possession of an aid program certificate** | | |
| SISBEN Certificate | 52,63 | 9,67 |
| Ex- combatant Certificate | 29,82 | 0 |
| Displaced aid program Certificate | 11,4 | 0 |
| *Familias en Acción* Program | 3,51 | 0 |
| **2. Use of welfare programs** | | |
| **People receiving benefits from public programs** | 79,27 | 29,03 |
| Education[1] | 56,92 | 88,89 |
| Nutrition[2] | 29,23 | 0 |
| Health[3] | 84,62 | 33,33 |
| Child Care[4] | 17,05 | 0 |

[1] Public schools and CADELs (Local Administrative Center for Education)

[2] Community kitchens and COLs (Local Operative Center)

[3] ARSs (Administradora del Régimen Subsidiado), UPAs (Unidad Primaria de Atención), UBAs (Unidad Básicas de Atención), CAMIs (Centros de Atención Médica Inmediata)

[4] *Hogares comunitarios*, daycare centers, kindergarten, Casas Vecinales, nursery schools.

## b. Socio-Demograhic Characteristics of the players.

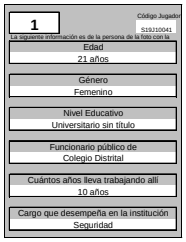
The following pages show a series of characteristics for the samples of participants. Recall that only the information in the card (see sample) was known to the other player. The rst of the data provided completes the characterization of our samples.

**Table. Players 2 Characteristics observed by Players 1**

| | | | Target | Control |
|---|---|---|---|---|
| **Gender** | Women | Mean | 57,93 | 58,06 |
| | Male | | 42,07 | 41,94 |
| **Race** | Black | | 15,24 | 19,35 |
| | Indigenous | | 7,93 | 0 |
| | Meztizo | | 76,83 | 80,65 |
| **SISBEN** | Yes | | 65,24 | 9,68 |
| | No | | 34,76 | 90,32 |
| **SISBEN group** | **0** | | 43,4 | 0 |
| | **1** | | 39,62 | 0 |
| | **2** | | 13,21 | 33,33 |
| | **3** | | 3,77 | 33,33 |
| | **4** | | 0 | 33,33 |
| **Education** | **Level** | Mean | 2,62 | 5,35 |
| | | Min | 0 | 4 |
| | | Max | 6 | 8 |
| | | SD | 0,79 | 0,8 |
| | **Years** | Mean | 8,15 | 17,26 |
| | | Min | 0 | 15 |
| | | Max | 18 | 20 |
| | | SD | 3,57 | 0,77 |
| **Other** | | | | |
| Displaced people | | Mean | 38,39 | 0 |
| People with disabilities | | | 3,57 | 0 |
| Excombatiente | | | 30,36 | 0 |
| Indigenous | | | 0,89 | 0 |
| Recycler | | | 16,07 | 0 |
| Street vendor | | | 10,71 | 0 |

| | | | Target | Control |
|---|---|---|---|---|
| **Age** | | Mean | 31,98 | 22,39 |
| | | Min | 65 | 32 |
| | | Max | 16 | 18 |
| | | SD | 12,87 | 3,56 |
| **Marital Status** | single | Mean | 39,63 | 96,77 |
| | married | | 7,93 | 3,23 |
| | union | | 36,59 | 0,00 |
| | Divorced | | 3,66 | 0 |
| | Widow | | 12,2 | 0 |
| **Activity** | Working | | 51,22 | 16,13 |
| | Studying | | 15,85 | 83,87 |
| | looking for a job | | 21,95 | 0 |
| | home work | | 7,93 | 0 |
| | Disabled | | 1,83 | 0 |
| | Other | | 1,22 | 0 |
| **Employment** | Private sector | | 27 | 100 |
| | Jornalero o peón | | 1,12 | 0 |
| | For the government | | 2,25 | 0 |
| | Home worker | | 6,74 | 0 |
| | Professional worker | | 1,12 | 0 |
| | Independent worker | | 59,55 | 0 |
| | no payment | | 2,25 | 0 |
| **Time in that activity** | | Mean | 4,78 | 10,26 |
| | | Min | 0 | 0,02 |
| | | Max | 40 | 21 |
| | | SD | 8,29 | 7,67 |
| **Estrato** | **0** | Mean | 13,5 | 0 |
| | **1** | | 26,99 | 3,23 |
| | **2** | | 25,77 | 9,68 |
| | **3** | | 17,79 | 54,84 |
| | **4** | | 15,95 | 19,35 |
| | **5** | | 0 | 6,45 |
| | **6** | | 0 | 6,45 |
| **Dependents** | | Mean | 1,98 | 0,00 |
| | | Min | 0 | 0 |
| | | Max | 7 | 0 |
| | | SD | 1,85 | 0,00 |
| **Children** | | Mean | 1,54 | 0,00 |
| | | Min | 0 | 0 |
| | | Max | 6 | 0 |
| | | SD | 1,58 | 0,00 |

## Table. Players 1 Characteristics observed by Players 2




| | Only Target | N | % |
|---|---|---|---|
| Service Provider | **Officers** | 176 | 77,53 |
| | **Education**[1] | 35 | 19,89 |
| | CADEL | | 22,86 |
| | CED | | 60,00 |
| | **Nutrition**[3] | 28 | 15,91 |
| | COL | | 21,95 |
| | DABS | | 39,29 |
| | IDIPRON | | 25,00 |
| | **Health**[2] | 34 | 19,31 |
| | CAMI | | 17,65 |
| | UBA | | 29,41 |
| | UPA | | 26,47 |
| | **Child Care**[4] | 54 | 30,68 |
| | jardinDABS | | 61,11 |
| | hogarICBF | | 38,89 |
| | **Surveyers SISBEN** | 31 | 13,66 |

| | | | Target | Control |
|---|---|---|---|---|
| **Age** | | Mean | 34,3 | 25,9 |
| | | Min | 55 | 54 |
| | | Max | 17 | 17 |
| | | SD | 8,43 | 8,79 |
| **Gender** | Women | Mean | 57,93 | 58,06 |
| | Male | | 42,07 | 41,94 |
| **Education** | **Level** | Mean | 4,46 | 5,71 |
| | | Min | 2 | 3 |
| | | Max | 8 | 8 |
| | | SD | 1,63 | 1,36 |
| | **Years** | Mean | 14,53 | 17,45 |
| | | Min | 4 | 12 |
| | | Max | 20 | 20 |
| | | SD | 3,91 | 1,66 |
| **Time in the activity** | | Mean | 5,49 | 3,48 |
| | | Min | 0,08 | 0,03 |
| | | Max | 33 | 22 |
| | | SD | 5,88 | 4,88 |
| **Position** | Private sector[5] | | 18,13 | 6,90 |
| | For the government[6] | | 81,87 | 93,10 |
| | Blue collar | | 36,43 | 7,14 |
| | White collar | | 63,57 | 92,59 |
| | Students | | 0,00 | 48,21 |

[1] Public schools and CADELs (Local Administrative Center for Education)
[2] ARSs (Administradora del Régimen Subsidiado), UPAs (Unidad Primaria de Atención), UBAs (Unidad Básicas de Atención), CAMIs (Centros de Atención Médica Inmediata)
[3] Community kitchens and COLs (Local Operative Center)
[4] *Hogares comunitarios*, daycare centers, kindergarten, Casas Vecinales, nursery schools.
[5] Universities and NGOs
[6] DNP (Departamento Nacional de Planeación), SGD (Secretaría de Gobierno Distrital), SHD (Secretaría de Hacienda Distrital)

c. **Payments**

As mentioned before, each player was played randomly at least one of the five games and a maximum of 3 games. The final frequency of each game being paid to each player is reported in the table below. Since in the 3PP game we needed to be pay at least player 3, and we wanted to pay all players when a game was selected, all players 1 and 2 involved in the 3PP were paid. Those players who were not paid the 3PP, were paid one of the other activities.

**Table. Frequency of payments by Activity**

| Role Player | Activity | | | | |
|---|---|---|---|---|---|
| | DDG | DG | UG | TG | 3PP |
| **1** | 19,33 | 14,29 | 18,07 | 13,03 | 39,08 |
| **2** | 59,09 | 14,05 | 16,94 | 12,81 | 39,26 |
| **3** | - | - | - | - | 100,00 |
| **Total** | 33,04 | 11,89 | 14,69 | 10,84 | 48,95 |

The final earnings, without show-up fee, are reported in the next tables, both in Col.Pesos and in US$ dollars. Overall, US$2,700 were paid to the 513 people who participated. Every player received also a show-up fee of Col.$4,000 (US$1.6).

**Table. Earnings (COL$) by Role[1]**

| Role Player | Mean | Max | Min | Sum | Desvest |
|---|---|---|---|---|---|
| **1** | 9.284 | 26.000 | 0 | 2.154.000 | 4.504 |
| **2** | 16.491 | 40.000 | 0 | 3.760.000 | 7.681 |
| **3** | 9.609 | 10.000 | 8.000 | 884.000 | 798 |
| **Total** | 12.315 | 40.000 | 0 | 6.798.000 | 6.725 |

[1]Any activity was not paid when the participant do not attend the session. These Earnings do not include the show up fee ($4.000) paid to each participant.

**Table. Earnings (US$) by Role[1]**

| Type Player | Mean | Max | Min | Sum | Desvest |
|---|---|---|---|---|---|
| **1** | 3,71 | 10,40 | 0,00 | 862 | 1,80 |
| **2** | 6,60 | 16,00 | 0,00 | 1.504 | 3,07 |
| **3** | 3,84 | 4,00 | 3,20 | 354 | 0,32 |
| **Total** | 4,93 | 16,00 | 0,00 | 2.719 | 2,69 |

[1]Any activity was not paid when the participant do not attend the session. These Earnings do not include the show up fee ($4.000 = US$1.60) paid to each participant.

## VII. Experimental results.

As a summary of the five games or activities, the following table illustrates the number of observations, the players involved and the Nash equilibria prediction for each game if we based a behavioral prediction based on backward induction for self-oriented (selfish) players.

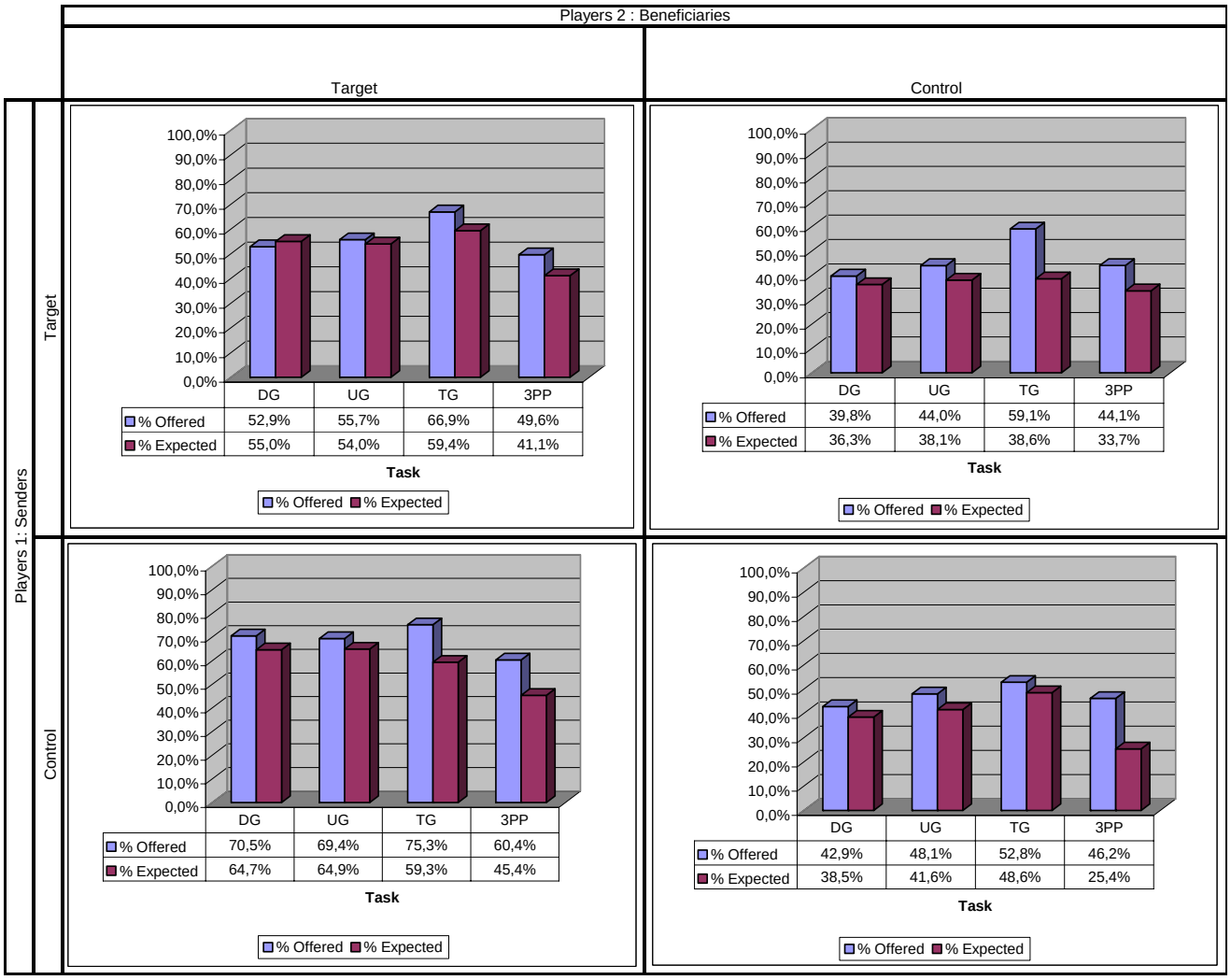
| Games | Dictator | Ultimatum | Trust | Third Party Punishment | General |
|---|---|---|---|---|---|
| **Total Observations** | 729 | 729 | 728 | 634 | 3950 |
| **Players involved in the game** | 1,2 | 1,2 | 1,2 | 1,2,3 | |
| **Maximum social efficiency** | $20,000 | $20,000 | $32,000 | $30,000 | |
| **Self-oriented material payoffs maximizer Nash prediction for social efficiency** | $20,000 | $20,000 | $16,000 | $30,000 | |
| **Self-oriented maximizer prediction for Player 1 offers (Nash equil)** | $0 | $1,000 | $0 | $0 | |

The tables below report the social efficiency and equity statistics for each of the games and for the two major types of (player 1-player 2) interactions by samples. That is, target-target, control-control, target-control and control-target.

| ***General*** | | | | | | |
|---|---|---|---|---|---|---|
| **Games** | | **Dictator** | **Ultimatum** | **Trust** | **Third Party Punishment** | **General** |
| *Number of Observations* | | 557 | 558 | 559 | 592 | 3396 |
| **Real social efficiency** | Mean | 100% | 89% | 83% | 93% | 91% |
| | Maximum | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| | Minimum | 1.00 | 0.00 | 0.50 | 0.73 | 0.00 |
| | Standard Deviation | 0.00 | 0.30 | 0.13 | 0.11 | 0.18 |
| **Player 2´s Equity** | Mean | 54% | 62% | 61% | 35% | 53% |
| | Maximum | 1.00 | 1.00 | 1.00 | 0.66 | 1.00 |
| | Minimum | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Standard Deviation | 0.28 | 0.24 | 0.17 | 0.15 | 0.24 |
| ***Target: Players 1, 2*** | | | | | | |
| *Number of Observations* | | 364 | 360 | 363 | 380 | 1467 |
| **Real social efficiency** | Mean | 100% | 89% | 83% | 93% | 91% |
| | Maximum | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| | Minimum | 1.00 | 0.00 | 0.50 | 0.73 | 0.00 |
| | Standard Deviation | 0.00 | 0.30 | 0.13 | 0.11 | 0.18 |
| **Player 2´s Equity** | Mean | 52% | 62% | 61% | 34% | 52% |
| | Maximum | 1.00 | 1.00 | 1.00 | 0.66 | 1.00 |
| | Minimum | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Standard Deviation | 0.27 | 0.23 | 0.17 | 0.15 | 0.24 |
| ***Control: Players 1, 2*** | | | | | | |
| *Number of Observations* | | 52 | 57 | 53 | 50 | 212 |
| **Real social efficiency** | Mean | 100% | 80% | 76% | 98% | 88% |
| | Maximum | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| | Minimum | 1.00 | 0.00 | 0.50 | 0.73 | 0.00 |
| | Standard Deviation | 0.00 | 0.30 | 0.12 | 0.05 | 0.24 |
| **Player 2´s Equity** | Mean | 42% | 61% | 57% | 30% | 48% |
| | Maximum | 1.00 | 1.00 | 0.93 | 0.66 | 1.00 |
| | Minimum | 0.00 | 0.30 | 0.13 | 0.00 | 0.00 |
| | Standard Deviation | 0.25 | 0.21 | 0.16 | 0.12 | 0.22 |
| ***Control: Players 1 - Target: Players 2*** | | | | | | |
| *Number of Observations* | | 98 | 99 | 99 | 108 | 404 |
| **Real social efficiency** | Mean | 100% | 94% | 87% | 93% | 94% |
| | Maximum | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| | Minimum | 1.00 | 0.00 | 0.50 | 0.73 | 0.00 |
| | Standard Deviation | 0.00 | 0.22 | 0.12 | 0.11 | 0.14 |
| **Player 2´s Equity** | Mean | 70% | 71% | 68% | 42% | 62% |
| | Maximum | 1.00 | 1.00 | 1.00 | 0.66 | 1.00 |
| | Minimum | 0.00 | 0.10 | 0.35 | 0.00 | 0.00 |
| | Standard Deviation | 0.28 | 0.23 | 0.16 | 0.16 | 0.24 |

**a. Average behavior: target vs control groups.**

The following graphs compare the results of average amounts offered by players 1 to player 2, by type of sub-sample (target vs control), and across the four games that involved sending an amount from an initial endowment (DG, UG, TG, 3PP).




In general, we can observe that Players 2´s expectations about the amounts of money sent by players 1 are lower than the real amount of money sent. However, the two variables are positively correlated as shown in the next table. The regression analysis further ahead will provide more clues for the reasons and behavioral motivations for these results.

| Variables | Correlation |
|---|---|
| DG offered | |
| DG expected | 0,1398*** |
| UG offered | |
| UG expected | 0,1318*** |
| TG offered | |
| TG expected | 0,1473*** |
| 3PP offered | |
| 3PP expected | 0,1120*** |

*** 1% Level of Signicance
** 5% Level of Signicance
* 10% Level of Signicance

It is possible to examine that when players 2 belong to the target group, the amount of money received is higher than what they would receive if they were in the control group. On the other hand, control players 1 send more money than target players 1 to target players 2. It is interesting to check that Players 2's expectations behaves in the same way, they expect more money from the control players 1 than the target players 1.

The internal validity of this study can be verified through the control players' decisions in their respective roles because it does not matter if players 1 are control or target, they will end up sending less money to control players 2 than what they would send to target players 2. Taking into account this, the experimental protocol and the sample design were successful because players 1 were able to distinguish between control and target players 2, given the framing of the experiment (see appendix for protocols). Control players 2 have equivalent expectations as target players 2 because they expected less money from target players 1 than control players 1. It is still open to inquiry weather lower expected offers by target players 1 were based on pro-social motivations on the part of players 2, or from lower expectations because of lower pro-social motivations expected by players 2 about players 1.

**b. Explaining variations in pro-social behavior.**

The following OLS regressions are aimed at explaining variation in the experimental behavior as a function of the attributes of player 2, and also as a function of the attributes of player 1 that players 2 observed of players 1.

We tested as dependent variables the following, all measured as % of the total possible amount in each game:

- Average ranking obtained in the DDG by player 2 from the rankings given by all players 1 who ranked that particular player 2
- Amounts offered by players 1 to players 2 in the DG, UG, TG and 3PP
- Amounts expected by players 2 from players 1 in the DG, UG, TG and 3PP

The regression results are:

| *Method* | *OLS* | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Dependent Variable* | *Average ranking* | | | | *% DG offered* | | | | *% DG expected* | | | |
| *Number of Observations* | 228 | | | | 673 | | | | 605 | | | |
| *Prob > F* | 0.000 | | | | 0.000 | | | | 0.000 | | | |
| *Adjusted R-square* | 0.46 | | | | 0.19 | | | | 0.17 | | | |
| *Independent variable* | Coeficient | t | p-value | Sig. | Coeficient | t | p-value | Sig. | Coeficient | t | p-value | Sig. |
| 1 if player 1 is control | | | | | 0.062 | 2.24 | 0.026 | ** | 0.101 | 4.02 | 0.000 | *** |
| 2 if player 1 is control | 0.254 | 1.04 | 0.299 | | -0.950 | -2.03 | 0.043 | ** | -0.188 | -4.42 | 0.000 | *** |
| Player 2´s Age | -0.002 | -0.40 | 0.690 | | 0.000 | 0.82 | 0.410 | | 0 | 0.72 | 0.473 | |
| 1 if player 2 finds herself unemployed | -0.179 | -1.09 | 0.277 | | 0.044 | 1.42 | 0.157 | | 0.062 | 2.10 | 0.036 | ** |
| *Estrato* | 0.164 | 2.32 | 0.021 | ** | -0.035 | -2.61 | 0.009 | *** | -0.018 | -1.54 | 0.123 | |
| Number of dependants | | | | | 0.025 | 3.33 | 0.001 | *** | -0.002 | -0.36 | 0.717 | |
| Number of minor dependants | -0.244 | -5.18 | 0.000 | *** | | | | | | | | |
| 1 if player 2 has *SISBEN* | -0.016 | -0.12 | 0.905 | | 0.270 | 1.02 | 0.310 | | 0.018 | 0.75 | 0.453 | |
| Years of Education | 0.007 | 0.44 | 0.658 | | 0.000 | 0.18 | 0.858 | | 0.002 | 0.94 | 0.348 | |
| 1 if player 2 is female | -0.454 | -3.96 | 0.000 | *** | 0.063 | 2.94 | 0.003 | *** | -0.004 | -0.23 | 0.819 | |
| 1 if player 2 finds herself black | -0.118 | -0.68 | 0.500 | | -0.008 | -0.25 | 0.803 | | 0.001 | 0.05 | 0.960 | |
| 1 if player 2 finds herself native | -0.336 | -1.45 | 0.148 | | 0.019 | 0.42 | 0.671 | | -0.095 | -2.45 | 0.014 | ** |
| 1 if player 2 was born in Bogotá | -0.059 | -0.41 | 0.682 | | -0.011 | -0.40 | 0.693 | | 0.038 | 1.50 | 0.134 | |
| 1 if player 2 is single | 0.227 | 1.22 | 0.224 | | 0.036 | 1.01 | 0.311 | | -0.072 | -2.20 | 0.028 | ** |
| 1 if player 2 is married | 0.418 | 1.71 | 0.088 | * | 0.000 | 0.00 | 0.999 | | 0.078 | 1.73 | 0.084 | * |
| 1 if player 2 is in common law | 0.260 | 1.48 | 0.141 | | 0.046 | 1.38 | 0.169 | | -0.066 | -2.09 | 0.037 | ** |
| 1 if player 2 is displaced | -0.286 | -1.70 | 0.091 | * | 0.004 | 0.15 | 0.883 | | 0.033 | 1.07 | 0.284 | |
| 1 if player 2 is excombatant | 0.055 | 0.20 | 0.844 | | 0.000 | 0.01 | 0.994 | | 0.010 | 0.21 | 0.833 | |
| 1 if player 2 is recycler | 1.010 | 3.80 | 0.000 | *** | -0.156 | -3.01 | 0.003 | *** | -0.079 | -1.80 | 0.073 | * |
| 1 if player 1 is blue collar | | | | | -0.131 | -5.63 | 0.000 | *** | -0.006 | -0.28 | 0.776 | |
| 1 if player 1 is female | | | | | -0.060 | -2.78 | 0.006 | *** | 0.040 | 2.09 | 0.037 | ** |
| Player 1´s Age | | | | | -0.003 | -2.32 | 0.021 | ** | 0.003 | 2.89 | 0.004 | *** |
| 1 if player 1 is single | | | | | -0.049 | -2.10 | 0.036 | ** | | | | |
| 1 if players 1,2 are married | | | | | 0.294 | 2.57 | 0.010 | ** | | | | |
| Constant | 3.067 | 7.10 | 0.000 | *** | -0.679 | 6.95 | 0.000 | *** | 0.437 | 5.27 | 0.000 | *** |

*** 1% Level of Signicance
** 5% Level of Signicance
* 10% Level of Signicance

| *Method* | *OLS* | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Dependent Variable* | *% UG offered* | | | | *% UG expected* | | | | *% TG offered* | | | |
| *Number of Observations* | 674 | | | | 605 | | | | 672 | | | |
| *Prob > F* | 0.000 | | | | 0.000 | | | | 0.000 | | | |
| *Adjusted R-square* | 0.16 | | | | 0.21 | | | | 0.10 | | | |
| *Independent variable* | Coeficient | t | p-value | Sig. | Coeficient | t | p-value | Sig. | Coeficient | t | p-value | Sig. |
| 1 if player 1 is control | 0.072 | 2.96 | 0.003 | *** | 0.101 | 4.82 | 0.000 | *** | 0.02 | 0.86 | 0.390 | |
| 2 if player 1 is control | -0.066 | -1.63 | 0.103 | | -0.068 | -1.92 | 0.055 | * | -0.57 | -1.18 | 0.237 | |
| Player 2´s Age | 0.000 | 0.99 | 0.321 | | 0.000 | 0.78 | 0.434 | | 0.00 | 1.00 | 0.318 | |
| 1 if player 2 finds herself unemployed | 0.049 | 1.79 | 0.075 | * | 0.021 | 0.89 | 0.376 | | 0.07 | 2.25 | 0.025 | ** |
| *Estrato* | -0.004 | -0.40 | 0.686 | | -0.028 | -2.75 | 0.006 | *** | -0.01 | -0.76 | 0.446 | |
| Number of dependants | 0.026 | 3.87 | 0.000 | *** | 0.002 | 0.47 | 0.642 | | 0.02 | 2.12 | 0.034 | ** |
| Number of minor dependants | | | | | | | | | | | | |
| 1 if player 2 has *SISBEN* | 0.031 | 1.37 | 0.172 | | -0.004 | -0.21 | 0.837 | | 0.021 | 0.78 | 0.436 | |
| Years of Education | -0.001 | -0.59 | 0.555 | | -0.001 | -0.34 | 0.735 | | 0.005 | 1.54 | 0.124 | |
| 1 if player 2 is female | 0.016 | 0.88 | 0.378 | | -0.022 | -1.35 | 0.177 | | 0.033 | 1.47 | 0.142 | |
| 1 if player 2 finds herself black | 0.015 | 0.52 | 0.605 | | 0.032 | 1.29 | 0.196 | | 0.032 | 0.92 | 0.359 | |
| 1 if player 2 finds herself native | -0.001 | -0.04 | 0.966 | | -0.099 | -3.13 | 0.002 | *** | 0.010 | 0.22 | 0.823 | |
| 1 if player 2 was born in Bogotá | -0.009 | -0.38 | 0.707 | | 0.028 | 1.36 | 0.176 | | -0.011 | -0.39 | 0.694 | |
| 1 if player 2 is single | 0.012 | 0.41 | 0.684 | | -0.120 | -4.49 | 0.000 | *** | -0.026 | -0.70 | 0.486 | |
| 1 if player 2 is married | 0.037 | 0.88 | 0.380 | | -0.009 | -0.24 | 0.809 | | -0.010 | -0.21 | 0.834 | |
| 1 if player 2 is in common law | 0.004 | 0.15 | 0.882 | | -0.034 | -1.31 | 0.189 | | 0.000 | 0.02 | 0.986 | |
| 1 if player 2 is displaced | 0.000 | 0.02 | 0.986 | | 0.046 | 1.83 | 0.068 | * | 0.051 | 1.49 | 0.137 | |
| 1 if player 2 is excombatant | -0.016 | -0.36 | 0.720 | | 0.071 | 1.68 | 0.094 | * | 0.040 | 0.73 | 0.467 | |
| 1 if player 2 is recycler | -0.010 | -0.24 | 0.812 | | -0.059 | -1.61 | 0.107 | | 0.064 | 1.20 | 0.232 | |
| 1 if player 1 is blue collar | -0.111 | -5.44 | 0.000 | *** | 0.005 | 0.28 | 0.777 | | -0.076 | -3.16 | 0.002 | *** |
| 1 if player 1 is female | -0.055 | -2.94 | 0.003 | *** | 0.007 | 0.43 | 0.665 | | -0.080 | -3.57 | 0.000 | *** |
| Player 1´s Age | 0.000 | 0.34 | 0.737 | | 0.002 | 2.37 | 0.018 | ** | 0.000 | -0.14 | 0.892 | |
| 1 if player 1 is single | 0.006 | 0.31 | 0.755 | | | | | | -0.049 | -2.01 | 0.045 | ** |
| 1 if players 1,2 are married | 0.158 | 1.62 | 0.106 | | | | | | 0.270 | 1.91 | 0.057 | * |
| Constant | 0.529 | 6.23 | 0.000 | *** | 0.544 | 7.74 | 0.000 | *** | 0.000 | 6.18 | 0.000 | *** |

*** 1% Level of Signicance

** 5% Level of Signicance

* 10% Level of Signicance

| *Method* | *OLS* | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Dependent Variable* | *% TG expected* | | | | *% 3PP offered* | | | | *% 3PP expected by Player 3* | | | |
| *Number of Observations* | 605 | | | | 599 | | | | 624 | | | |
| *Prob > F* | 0.000 | | | | 0.000 | | | | 0.000 | | | |
| *Adjusted R-square* | 0.10 | | | | 0.16 | | | | 0.08 | | | |
| *Independent variable* | Coeficient | t | p-value | Sig. | Coeficient | t | p-value | Sig. | Coeficient | t | p-value | Sig. |
| 1 if player 1 is control | 0.048 | 1.85 | 0.065 | * | 0.046 | 1.86 | 0.064 | * | 0.016 | 0.64 | 0.523 | |
| 2 if player 1 is control | -0.092 | -2.07 | 0.039 | ** | -0.068 | -1.43 | 0.153 | | -0.15 | -3.04 | 0.002 | *** |
| Player 2´s Age | 0.001 | 1.62 | 0.106 | | 0.000 | 0.16 | 0.875 | | -0.0007 | -0.65 | 0.518 | |
| 1 if player 2 finds herself unemployed | -0.041 | -1.31 | 0.192 | | 0.041 | 1.35 | 0.177 | | 0.044 | 1.40 | 0.162 | |
| *Estrato* | -0.033 | -2.59 | 0.010 | ** | 0.002 | 0.22 | 0.829 | | 0 | 0.04 | 0.966 | |
| Number of dependants | 0.004 | 0.54 | 0.591 | | 0.000 | 0.08 | 0.940 | | 0.016 | 2.09 | 0.037 | ** |
| Number of minor dependants | | | | | | | | | | | | |
| 1 if player 2 has *SISBEN* | -0.041 | -1.54 | 0.124 | | 0.051 | 1.86 | 0.063 | * | 0.010 | 0.35 | 0.727 | |
| Years of Education | 0.002 | 0.70 | 0.482 | | -0.005 | -1.63 | 0.104 | | 0.004 | 1.26 | 0.208 | |
| 1 if player 2 is female | -0.017 | -0.85 | 0.397 | | 0.040 | 1.92 | 0.055 | * | 0.023 | 1.10 | 0.274 | |
| 1 if player 2 finds herself black | -0.081 | -2.52 | 0.012 | ** | -0.035 | -0.96 | 0.336 | | -0.026 | -0.68 | 0.497 | |
| 1 if player 2 finds herself native | 0.019 | 0.46 | 0.646 | | 0.030 | -0.87 | 0.386 | | -0.067 | -1.85 | 0.065 | * |
| 1 if player 2 was born in Bogotá | -0.020 | -0.78 | 0.438 | | 0.027 | -1.09 | 0.277 | | -0.018 | -0.71 | 0.476 | |
| 1 if player 2 is single | 0.018 | 0.53 | 0.596 | | 0.067 | 2.14 | 0.033 | ** | 0.058 | 1.80 | 0.073 | * |
| 1 if player 2 is married | 0.077 | 1.59 | 0.112 | | 0.090 | 1.87 | 0.062 | * | 0.197 | 4.01 | 0.000 | *** |
| 1 if player 2 is in common law | 0.044 | 1.32 | 0.188 | | 0.005 | 0.18 | 0.866 | | 0.067 | 1.91 | 0.056 | * |
| 1 if player 2 is displaced | 0.091 | 2.77 | 0.006 | *** | 0.036 | 1.05 | 0.293 | | -0.050 | -1.42 | 0.156 | |
| 1 if player 2 is excombatant | 0.050 | 0.92 | 0.357 | | -0.141 | -2.63 | 0.009 | *** | -0.048 | -0.86 | 0.388 | |
| 1 if player 2 is recycler | -0.003 | -0.08 | 0.934 | | -0.045 | -0.93 | 0.350 | | 0.080 | 1.60 | 0.109 | |
| 1 if player 1 is blue collar | 0.001 | 0.05 | 0.962 | | -0.086 | -3.78 | 0.000 | *** | 0.017 | 0.72 | 0.473 | |
| 1 if player 1 is female | -0.010 | -0.52 | 0.603 | | -0.079 | -3.88 | 0.000 | *** | -0.018 | -0.89 | 0.372 | |
| Player 1´s Age | 0.001 | 1.14 | 0.253 | | 0.000 | 0.77 | 0.443 | | 0.000 | -0.45 | 0.656 | |
| 1 if player 1 is single | | | | | -0.004 | -0.22 | 0.824 | | | | | |
| 1 if players 1,2 are married | | | | | 0.097 | 0.99 | 0.324 | | | | | |
| Constant | 0.536 | 6.17 | 0.000 | *** | 0.541 | 5.43 | 0.000 | *** | 0.342 | 3.54 | 0.000 | *** |

*** 1% Level of Signicance

** 5% Level of Signicance

* 10% Level of Signicance

**VIII**. **Experimental Bibliography.**

The designs for the 5 games conducted were inspired on the following original sources

TRUST GAME (TG) : Berg, Joyce, John Dickhaut, and Kevin McCabe (1995); "Trust, Reciprocity and Social
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The DISTRIBUTIVE DICTATOR GAME was inspired by discussions and suggestions from Catherine Eckel (U.Texas, Dallas)

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